Flank free modified supine versus prone position in percutaneous nephrolithotomy: A prospective randomized study

139

Desoky E.A.E., Zaied A.E.M., Youssef M.K., Alayman A.A., Shahin A.M.S., Kamel H.M.

Urology Department, Zagazig University, Zagazig, Egypt

OBJECTIVES

INTRODUCTION: Percutaneous nephrolithotomy (PNL), is the gold standard for the management of large and/or complex urolithiasis, the question is what is the gold standard position for PNL? The prone position, has several drawbacks [1-3] . The supine PNL as described by Valdivia et al [4] ,is more comfortable for the surgeon and the X-ray exposure to the surgeon is decreased, however it suffers some mechanical limitations attributed to limited freedom in manipulating both the access and the stone with a 3 Liter water bag under the flank. Our modification (Flank Free Modified Supine Position) aims to overcome these limitations and provide easy access comparable to access in prone position.

OBJECTIVES: To compare the technical aspects, operative time, safety, and efficacy of percutaneous nephrolithotomy (PNL) in the flank free modified supine position versus the standard prone position.

METHODS

The present study was conducted at Urology Department Zagazig University Hospitals, from October 2008 to May 2010. Seventy seven patients (47 men, 30 women) with renal stones were enrolled in the study and randomized into 2 groups: group A, 39 patients, flank free modified supine position and group B, 38 patients, prone position .

Inclusion criteria : Patients with indication for PNL and have no contraindication to perform the procedure in prone position**.**

Exclusion criteria : Intrarenal anomalies, uncorrectable bleeding disorders, BMI over 40 Kg/m2, and pregnancy**.**

Procedures : In group A, patients were placed in flank free modified supine position by putting a suitable cushion (3L water bag or less according to body weight) under the ipsilateral shoulder (red arrow Pic. 2) , fixing ipsilateral arm over the thorax, and crossing the extended patient's ipsilateral leg over the contralateral leg (red arrow Pic. 1). In group B, patients were turned to the standard prone position. Procedure was considered successful if the patient became stone free or had residual fragments < 5 mm in diameter. The operative time (from end of fixing the ureteric catheter to removal of endotracheal tube) was estimated and operative complications were recorded.

RESULTS

Patients in both groups have comparable preoperative clinical data (Table1). The operative time was significantly longer in the group B (prone position) than group A (Table2). One patient in each group, was converted to open surgery due to bleeding. One case of urine leakage (for more than one week) in group (A) necessitated JJ fixation, likewise two cases in group B (Graph3).

CONCLUSIONS

The Flank Free Modified Supine Position assimilates efficacy , safety and easy maneuverability as prone position in cases of PNL and offers a significantly less operative time. Further studies are demanded to prove anesthesiologic advantages of flank free modified supine position.

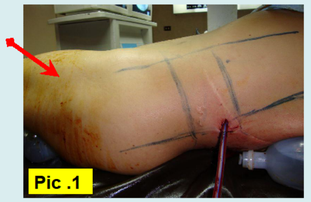
Table (1): Patients' Demographics & Clinical Characters

		Group A	Group B	P value
Number of Patients,		39	38	
Male/ Female		24/15	23/15	
Age(yrs) Mean ±SD		40.8 ± 10.5	44.2 ± 10.4	
BMI Mean ± SD		28.8 ±4.7	29.2 ± 3.8	0.73
History of	ipsilateral Renal surgery	19	15	0.29
	ipsilateral ESWL	5	6	0.75
Stone side	Rt/Lt	17/22	20/18	0.43
Stone location	Pelvis	15	12	0.79
	Calycx	7	10	
	Both	17	16	
Stone diameter (Cm) Mean (± SD)		3.4± 0.8	3.2 ± 0.7	0.9
Stone opacity (opaque/ lucent)		29/10	31/7	0.71

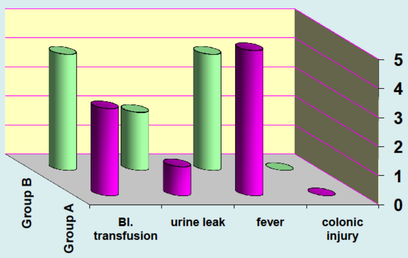
Table (2): Operative Data & Patients' outcome

		Group A	Group B	P value
Punctured Calyx Lower	No (%)	30 (76.9%)	27 (71.1%)	
Middle	No (%)	3 (7.7%)	4 (10.5%)	
Upper	No (%)	0	0	
combined Lower & middle	No (%)	6 (15.4%)	7 (18.4%)	
Fluoroscopy time (min) ;	Mean ± SD	6.5 ± 1.7	6.5 ± 2	0.88
Operation time (min)	Mean ± SD	88 ± 16	104 ± 25	0.001
Conversion to open surgery	No (%)	1 (2.6%)	1 (2.6%)	
Second look	No(%)	4 (10.2%)	5 (13.1%)	
Postoperative ESWL	No (%)	2 (5.1%)	1 (2.6%)	
Successful procedure	No (%)	32 (82%)	31 (81.5%)	0.74

Pic. 1, 2 **Flank Free Modified Supine Position**



Graph 3 Post operative complications



DISCUSSION

- PNL is usually performed in prone position , However it has many ***drawbacks*** :
  - It prolongs the operative time due to position changes,
  - Has adverse effects on ventilation and blood circulation especially in obese patients
  - Radiation exposure to surgical team is relatively more in prone than supine position. [1-3]
- In the flank free modified supine position putting a suitable cushion under the ipsilateral shoulder **instead of** under the flank in Valdivia position, and extending the ipsilateral leg over the flexed contralateral leg **increase the distance between the last rib and iliac crest, together with no cushion under the flank *provide ample space* for puncture, dilation ,doing multiple tracts and maneuverability of the system with the nephroscope.** Thus this position has the advantages of supine position of being more comfortable and the decreased X-ray exposure to the surgeon **combined with** wide puncture area and easy maneuverability as prone position.

REFERENCES

1-Rana AM, Bhojwani JP, Junejo NN, Das Bhagia S.: Tubeless PCNL with patient in supine position: procedure for all seasons?--with comprehensive technique. Urology. 2008; 71:581-5.

2-De Sio M, Autorino R, Quarto G, et al. : Modified supine versus prone position in percutaneous nephrolithotomy for renal stones treatable with a single percutaneous access: a prospective randomized trial. Eur Urol. 2008; 54:196-202.

3- Roberto Miano,Cesare Scoffone,Cosimo De Nunzio,Stefano Germani, Cecilia Cracco, Paolo Usai, Andrea Tubaro , Fernando J. Kim, and Salvatore Micali, : Position: Prone or Supine Is the Issue of Percutaneous Nephrolithotomy J. Endourol. 2010, 24, 1-8.

4-Valdivia Uria JG, Valle GJ, Lopez Lopez JA et al. : Technique and complications of percutaneous nephroscopy: experience with 557 patients in the supine position. J Urol 1998; 160:1975–8.

Poster Session Online
European Association of Urology
DOI: 10.3252/pso.eu.26eau.2011
PCNL 1
Ashraf Shahin
139--P
26eau